Objectives: Student will be able to:

**Key Terms:**

|  |
| --- |
| • aerobic respiration,  anaerobic respiration  • ATP  • carbon cycle  • chemosynthesis  • cellular respiration  • energy conversion: light,  chemical  • metabolism  • mitochondria and  chloroplasts  • photosynthesis  • prokaryotes and eukaryotes |
|  |
|  |
|  |
|  |
|  |

* **Develop a list of essential activities that must be carried out**

**by all living things by creating a Circle Map.**

* **Develop an argument that relates light, chloroplasts and the**

**capture and release of energy to the success of**

**photosynthesis.**

* **Determine the effect of light on photosynthesis by**

**collecting evidence and developing an argument that uses**

**evidence and logical reasoning.**

* **Develop a plan to address the needs of humans living under**

**specific extreme conditions by researching and then**

**creating a man-made habitat (Project)**

* **Use evidence from lab to compare the transfer and use of**

**matter and energy by photosynthetic and non-**

**photosynthetic organisms.**

* **Categorize and explain the materials and products of**

**cellular respiration and the role of the mitochondria.**

* **Compare anaerobic and aerobic respiration by analyzing**

**lab data.**

Oxygen

Carbon Dioxide

Glucose

Sun

Light

Water

**6** **CO2 + 6 H2O C6H12O6 + 6O2**



Pertinent Information:

|  |  |
| --- | --- |
| **“Big” Ideas** | As matter and energy flow through different levels of organization of living systems – cells, organs, organisms, communities – ***chemical elements are recombined in different ways to form different products.***  Through photosynthesis, plants take energy from light to form sugar molecules (high energy level) containing carbon, hydrogen, and oxygen from lower energy molecules.  These sugar molecules can be used to make amino acids and other carbon-containing molecules and assembled into larger molecules with biological activity.  Energy is transferred when the bonds of food molecules are broken and new compounds with lower energy are formed. Some of the energy is used to change ADP, (low energy), into ATP, an energy carrier that functions in a variety of pathways. |
| **Essential Question** | ***How can we illustrate the ways organisms obtain and use the matter and energy they need to live and grow?*** |
| **Enduring Understanding** | As matter and energy flow through different levels of organization of living systems – cells, organs, organisms, communities – chemical elements are recombined in different ways to form different products.  Carbon and oxygen move between organisms and the environment through the processes of photosynthesis and cellular respiration.  During photosynthesis, light energy is converted to chemical energy as carbon dioxide and water combine to form glucose and oxygen.  The energy stored in food is released as ATP during cellular respiration. |

Notes: